REMARKS

This Amendment is responsive to the Office Action dated June 17, 2008. Applicant has amended claims 1, 8, 9, 10, 12, 18-20, 22-25, 27, 29, 31 and 38-40. Applicant has canceled claims 7, 17 and 37. Claims 1-6, 8-16, 18-36 and 38-41 are now pending.

Claims 1-24 and 31-41

In the Office Action, the Examiner rejected claims 1–24 and 31–41 under 35 U.S.C. 102(b) as being anticipated by Tong (US 5,982,434). Applicant respectfully traverses the rejections to the extent such rejections may be considered applicable to the amended claims. Tong fails to disclose each and every feature of the claimed invention and provides no teaching that would have suggested a rational reason for a person of ordinary skill in the art to arrive at the claimed invention.

As amended, independent claim 1 recites a method for generating multiple descriptions of compressed data. The method of claim 1 requires generating transform coefficients from input data, quantizing the transform coefficients, generating an energy distribution of the quantized transform coefficients, grouping the transform coefficients into layers based on the energy distribution, entropy coding a first number of the layers to generate a first description of compressed data, and entropy coding a second number of the layers to generate a second description of compressed data.

Thus, according to claim 1, multiple descriptions of compressed data are generated. Specifically, the transform coefficients are grouped into layers, and then two different entropy coding processes are performed on two different groups of the layers to generate two different descriptions of compressed data. According to claim 1, entropy coding occurs with respect to a first number of the layers to generate a first description of compressed data, and entropy coding also occurs with respect to a second number of the layers to generate a second description of compressed data.

As outlined throughout Applicant's specification, these features are very useful to facilitate layered coding that targets several different applications, such as digital cinema, HDTV, SDTV, DSS and thumbnails. According to the claimed invention, different numbers of the layers are entropy coded separately in order to generate different descriptions of compressed data. In

this way, the claimed invention allows for the generation of multiple descriptions of compressed data in order to support several different applications, such as digital cinema, HDTV, SDTV, DSS and thumbnails.

Tong fails to disclose or suggest any techniques for generating multiple descriptions of compressed data. Tong concerns an image coding scheme based on wavelet transforms (i.e., sub-band transforms), but the image coding scheme of Tong does not generate multiple descriptions of compressed data. Moreover, Tong fails to disclose or suggest any techniques that include grouping the transform coefficients into layers based on the energy distribution, entropy coding a first number of the layers to generate a first description of compressed data, and entropy coding a second number of the layers to generate a second description of compressed data.

Run length coder 4 of Tong does not perform different entropy coding on different numbers of layers to generate different descriptions of compressed data. Instead, run length coder 4 simply performs entropy coding processes on wavelet-transformed coefficients of wavelet sub-trees. In particular, run length coder 4 of Tong follows an S-based scanning process (see FIG. 4 of Tong for an illustration of S-based scanning) in which the quantized wavelet transformed coefficients are scanned according to an S-shaped scan order. This S-shaped scan order provides for good groupings of coefficients for purposes of entropy coding, according to Tong. However, the run-length coding of Tong does not perform different entropy coding on different numbers of layers in order to generate two or more different descriptions of the compressed data. Accordingly, Tong clearly fails to disclose or suggest grouping the transform coefficients into layers based on the energy distribution, entropy coding a first number of the layers to generate a first description of compressed data, and entropy coding a second number of the layers to generate a second description of compressed data, as required by claim 1.

In other words, Tong simply run-length codes the coefficients that are supplied in order to generate one description of compressed data. Nothing in Tong generates two or more different descriptions of compressed data, and nothing in Tong uses two different entropy coding processes with respect to two different numbers of layers in order to generate such two or more different descriptions of compressed data.

Furthermore, it is also unclear whether Tong ever groups any transform coefficients into layers based on the energy distribution, as required by claim 1. While Tong may group transform

coefficients into sub-trees based on frequency bands, the Examiner did not explain how the different sub-bands described by Tong have any relation to energy distribution. Therefore, it is also unclear whether Tong ever groups any transform coefficients into layers based on the energy distribution insofar as it is unclear whether different sub-bands of Tong have any relation to energy distribution.

Tong also describes a multiplexer/variable length coder 6. However, this element simply combines data of run length coder 4 with motion vectors to generate an overall coded bitstream. Like run length coder 4, multiplexer/variable length coder 6 of Tong fails to generate two different descriptions of compressed data, and also fails to group layers based on energy distribution. Instead, the output of Tong appears to be a description of the coded data, e.g., data that is coded via wavelet-based zero tree coding, run-length coding, and multiplexing. Nothing in Tong suggests the separate entropy coding of first and second numbers of layers to generate first and second descriptions of compressed data. Furthermore, the Examiner did not identify a teaching in Tong that relates to grouping transform coefficients into layers based on the energy distribution.

Again, the separate entropy coding of first and second numbers of layers to generate first and second descriptions of compressed data is very useful in order to target several different applications, such as digital cinema, HDTV, SDTV, DSS and thumbnails. Not only does Tong fail to perform two or more separate entropy coding processes to generate two different descriptions of the compressed data, but Tong also fails to even recognize or address any desire to compress data differently for different target applications. For example, Tong lacks any discussion of a need, desire, or solution for generating multiple different descriptions of compressed data, such as digital cinema, HDTV, SDTV, DSS and thumbnails. Accordingly, the features of claim 1 are patentably distinguishable from Tong.

Tong simply describes a different type of encoding, e.g., wavelet-based zero tree coding. The process of Tong generates a compressed description of data, but fails to disclose or suggest the generation of first and second descriptions of the compressed data based on first and second entropy coding processes that occur with respect to different numbers of layers of the compressed data. In this context, it is also unclear whether Tong groups any transform coefficients into

layers based on energy distribution insofar as the Examiner has not demonstrated that different sub-bands of Tong have any relation to energy distribution.

Given the amendments to claim 1, and the foregoing comments, Applicant believes that the rejections of claim 1 should be withdrawn. Similar arguments also apply with respect to claims 12, 22 and 31, which recite similar features to those of claim 1, in formats consistent with other statutory classes of patentable subject matter. Applicant does not acquiesce to the rejections of any of the dependent claims or the Examiner's interpretations of the prior art, and Applicant reserves the right to present additional arguments with respect to any of the claims.

Claims 25-30

The Examiner rejected claims 25-30 under 35 U.S.C. 103(a) as being unpatentable over Tong in view of Itawaki (US 2002/0085584). Independent claims 25, 27 and 29 have each been amended for clarification purposes. Applicant respectfully traverses the rejections to the extent such rejections may be considered applicable to the amended claims. Tong fails to disclose each and every feature of the claimed invention and provides no teaching that would have suggested a reason for a person of ordinary skill in the art to arrive at the claimed invention. Furthermore, Itawaki fails to remedy the deficiencies of Tong relative to the features of Applicant's amended claims.

As amended, claim 25 recites a method for generating compressed data based on quantized transform coefficients of the data. The method comprises accessing an inventory of multiple layers of compressed data generated based on an energy distribution of the quantized transform coefficients, wherein the multiple layers comprise different entropy coded layers of compressed data, extracting a first selected number of layers from the inventory based on a first bit rate requirement to generate a first description of the compressed data, and extracting a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data. Claims 27 and 29 recite similar features to those of claim 25, in formats consistent with other statutory classes of patentable subject matter.

As outlined above in the discussion of claim 1, Tong simply describes a different type of encoding, e.g., wavelet-based zero tree coding. The process of Tong generates a compressed description of data, but fails to disclose or suggest the generation of first and second descriptions

of the compressed data. In this context, Tong clearly fails to disclose or suggest the generation of first and second descriptions of the compressed data based on two different selected numbers entropy coded layers of compressed data.

Moreover, Tong also fails to suggest extracting a first selected number of layers and a second number of layers from an inventory (which is generated based on an energy distribution of the quantized transform coefficients). In addition, Tong fails to contemplate such extraction of the first and second selected numbers of layers from the inventory based on first and second bit rate requirements.

By maintaining an inventory that is generated based on an energy distribution of the quantized transform coefficients, Applicant's claimed invention may provide a useful mechanism for generating two or more different descriptions of compressed data. In this case, the claimed invention (of claims 25, 27 and 29) requires extracting a first selected number of layers from the inventory based on a first bit rate requirement to generate a first description of the compressed data, and extracting a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data. Tong fails to disclose or suggest these requirements of Applicant's claims.

The secondary reference (Itawaki) fails to overcome the deficiencies of Tong addressed above. While Itawaki may disclose encoding adjustments to data based on a desired bitrate, the techniques of Itawaki concern the combination of different types of content within a given bandwidth allocation.

Itawaki (like Tong) fails to contemplate accessing an inventory of multiple layers of compressed data generated based on an energy distribution of the quantized transform coefficients, wherein the multiple layers comprise different entropy coded layers of compressed data. In addition, Itawaki (like Tong) fails to disclose or suggest extracting a first selected number of layers from the inventory based on a first bit rate requirement to generate a first description of the compressed data, and extracting a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data.

In Itawaki, there appears to be a single bit rate requirement that corresponds to the current bandwidth in the system. Itawaki adjusts the encoding of multiple channels of content so that all

of the content may fit within the allocated bandwidth. Itawaki fails to access an inventory of multiple layers of compressed data that is generated based on an energy distribution of the quantized transform coefficients, fails to extract a first selected number of layers from the inventory based on a first bit rate requirement to generate a first description of the compressed data, and fails to extract a second selected number of layers from the inventory based on a second bit rate requirement to generate a second description of the compressed data.

In addition, Itawaki (like Tong) fails to disclose or suggest the generation of first and second descriptions of the compressed data based on two different selected numbers entropy coded layers of compressed data. In fact, Itawaki does not appear to even use entropy coding as any basis for the creation of definition of different descriptions of the compressed data. For example, the Examiner has identified nothing in Itawaki (or Tong) that contemplates the use of different entropy coding processes on a layered basis in order to facilitate the creation of definition of different descriptions of the compressed data. Thus, Itawaki (like Tong) fails to disclose or suggest the generation of first and second descriptions of the compressed data based on two different selected numbers entropy coded layers of compressed data.

In view of the present claim amendments and foregoing comments, Applicant respectfully submits that independent claims 25, 27 and 29 (and the respective dependent claims) recite patentable subject matter. Applicant does not necessarily acquiesce to any of the former rejections or prior art interpretations advanced by the Examiner, and Applicant reserves the right to present additional arguments.

CONCLUSION

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 17-0026. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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